VSP-RSM
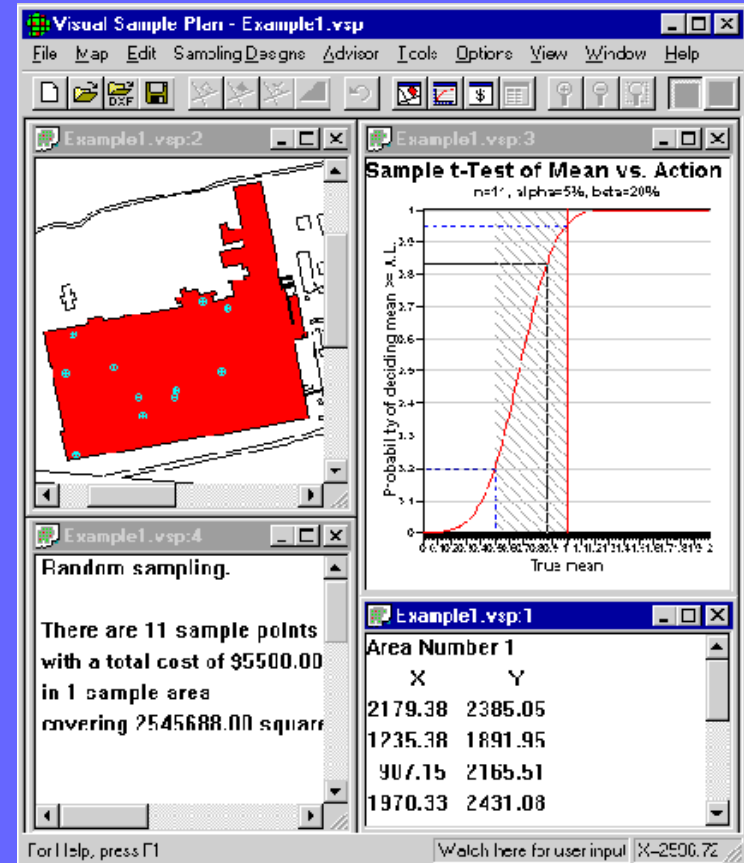
What is VSP

- Automated tool developed by DoE/Batelle; adapted and used by EPA
- Generates maps and optimal, defensible sampling designs
- Supports decision-making in the field
- Provides automated statistics to balance costs and decision risks

  (no need for a statistician)
- Generates documentation to support decisions

What is VSP

VSP provides statistical solutions to sampling design, world-class mathematical and statistical algorithms, and a user-friendly visual interface, while answering two important questions in sample planning.

❖How many samples are needed?
❖Where should the samples be taken?

Statistician in a box

What is VSP

- Development principally funded by DOE and EPA

- Generates documentation that supports selection of the right type, quantity, and quality of data required for confident decisions.

- Non-proprietary; available for free download

VSP-RSM

- RSEPA will assess potential migration of munitions constituents from operational ranges to off-range areas
- VSP-RSM supports development of sampling designs to delineate the boundary of soil contamination at the range
- Interfaces with Operational Range Site Model (ORSM) and common spreadsheet formats

VSP-RSM

* Comparability
  - VSP-RSM will promote consistency in sampling design
  - Allows for range data to be easily compared and rated.
* Flexibility
  - Promotes Dynamic Work Plans

VSP-RSM

* Dynamic Work Plan
  - Flexible approaches that determine how subsequent data collection activities should proceed in the field.
  - Use a decision tree to guide project teams
    * where to sample next
    * how many samples to collect
    * when sampling can be stopped.

VSP-RSM

Perimeter Transect Sampling.

- ❖ Determines the required spacing and placement of sampling points along the assumed source area boundary (Transect Lines).

- ❖ Multiple increment sampling is employed (EPA/QA G-5s)
  - Improves the representativeness of samples
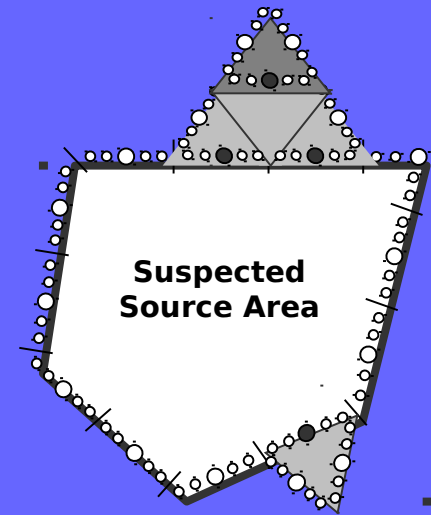 - Manages sampling uncertainty due to inherent site variability.
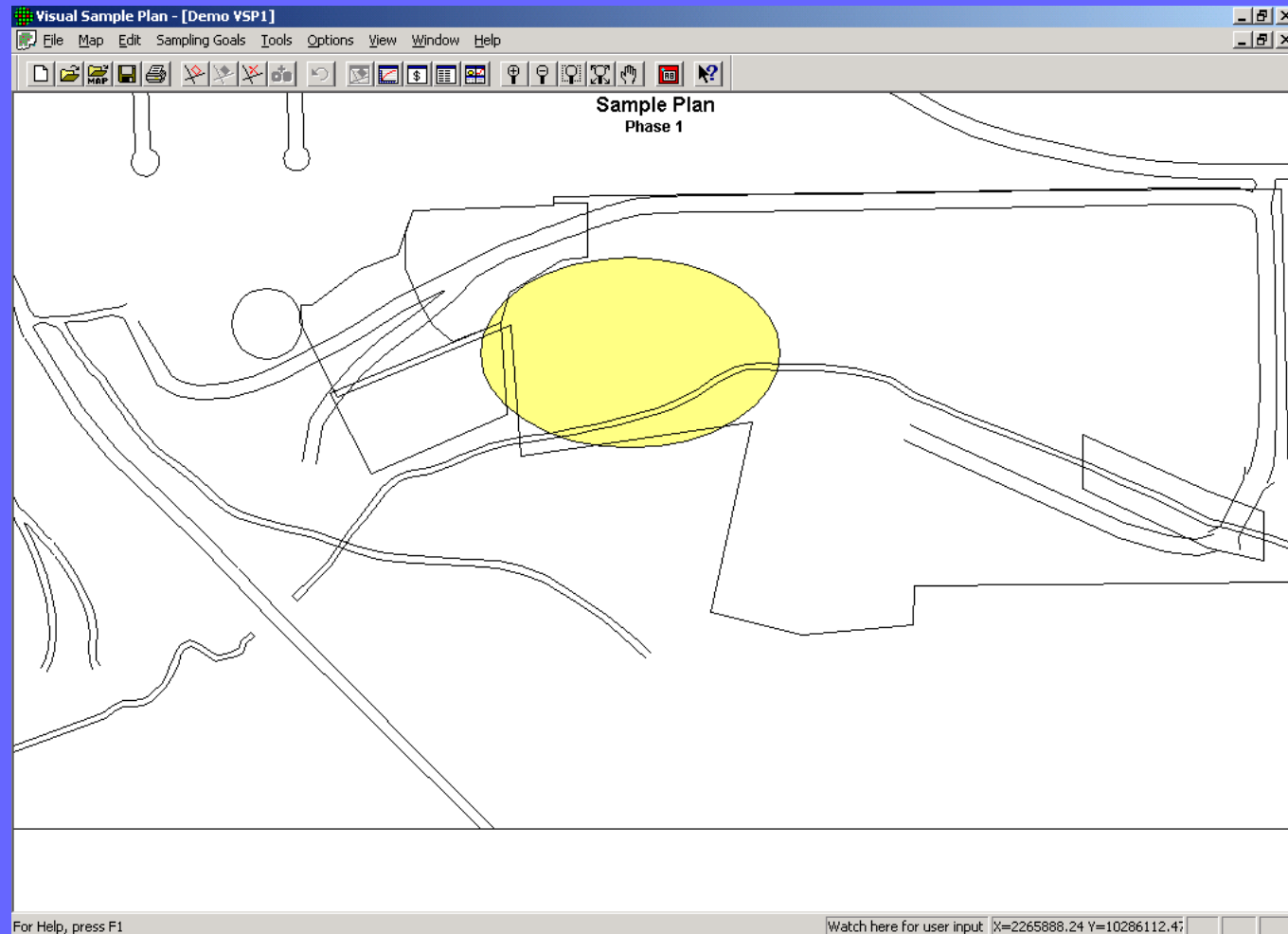

Suspected Source Area

Transect Line
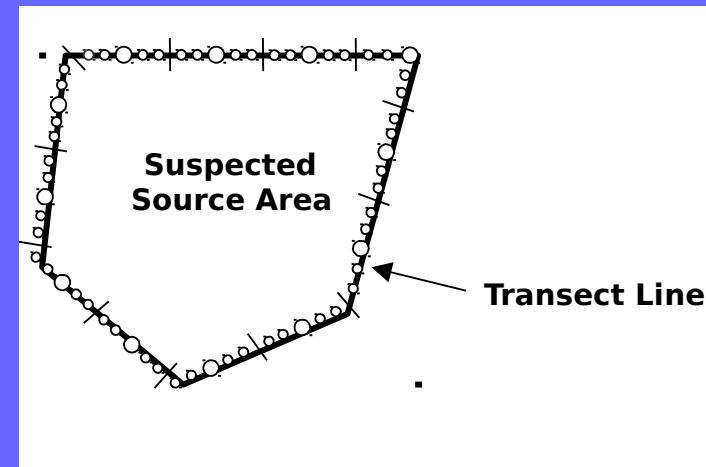
VSP-RSM

* Multiple Increment Sampling
    – Is the collection of material from adjacent locations, that are in a single sampling unit, and combining them into one sample
        * This accounts for the heterogeneity of the munitions constituents in the soil
        * In VSP-RSM each sampling unit is made up of 5 points and each sampling point has 5 separate increments, resulting in 25 increments for each sample
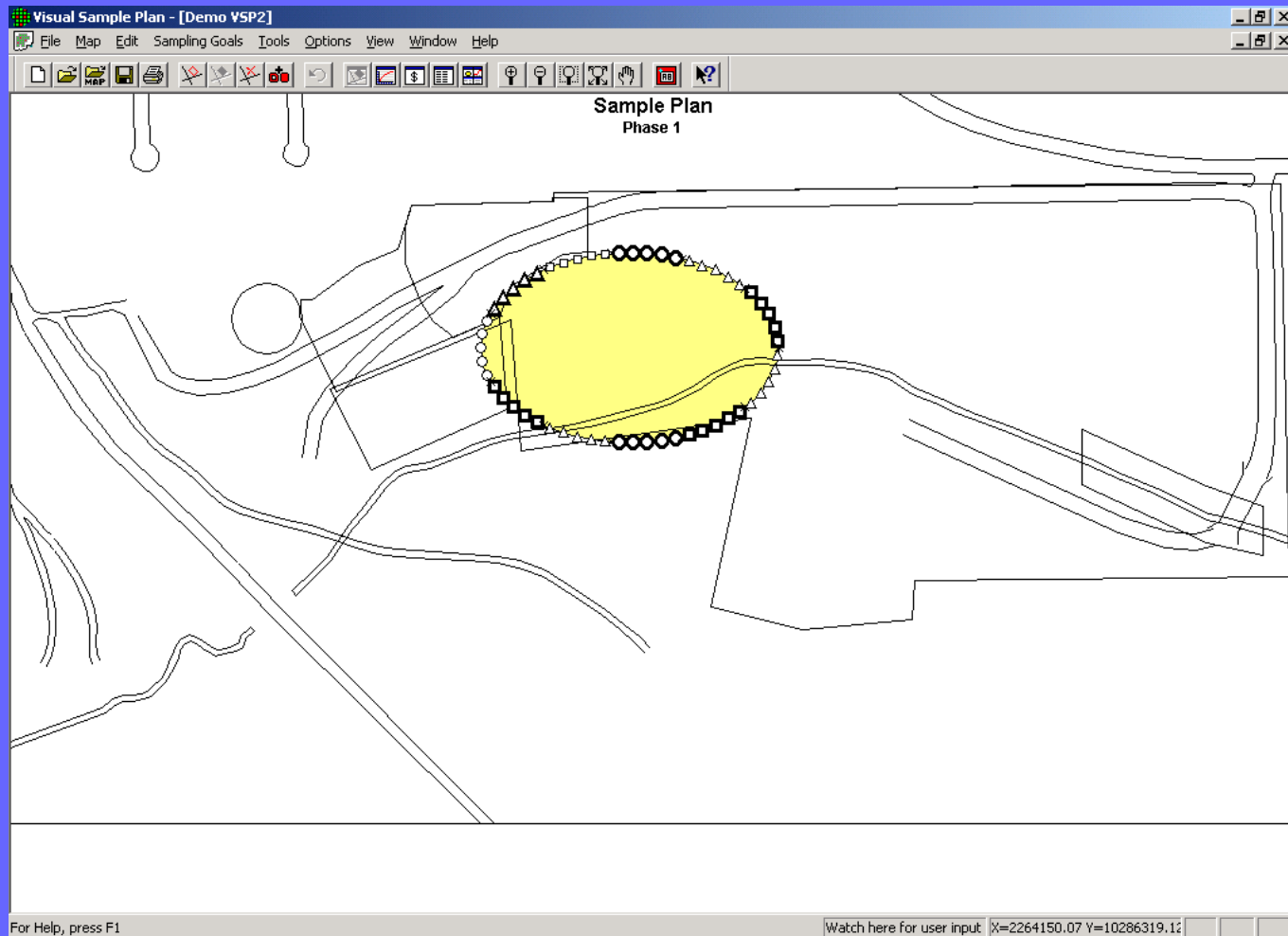
VSP-RSM

❖ For each segment on the boundary where the initial Perimeter Transect Sampling shows munitions constituent concentrations exceeding the relevant screening values, VSP-RSM selects subsequent sample points by triangulating out from that segment.
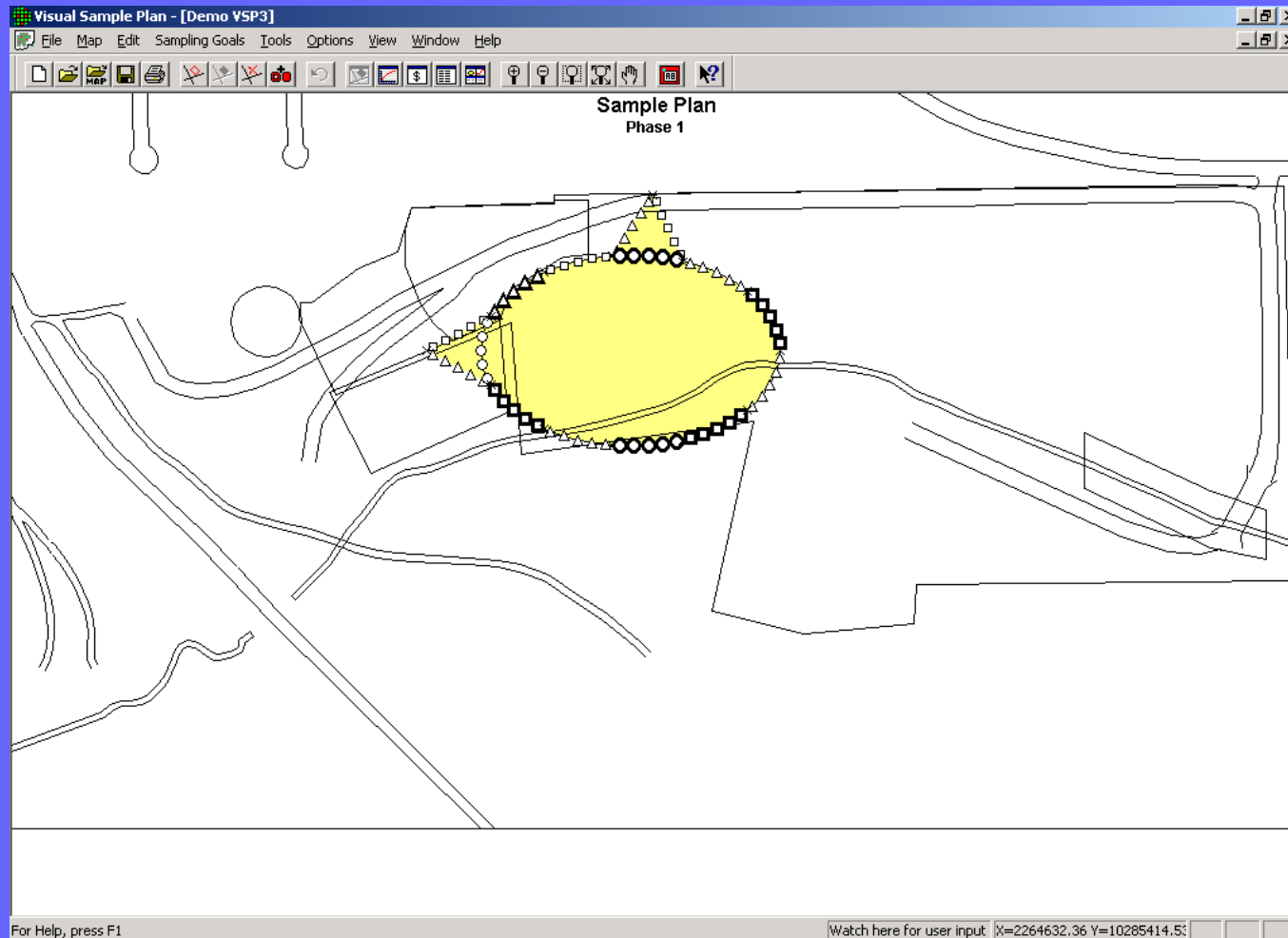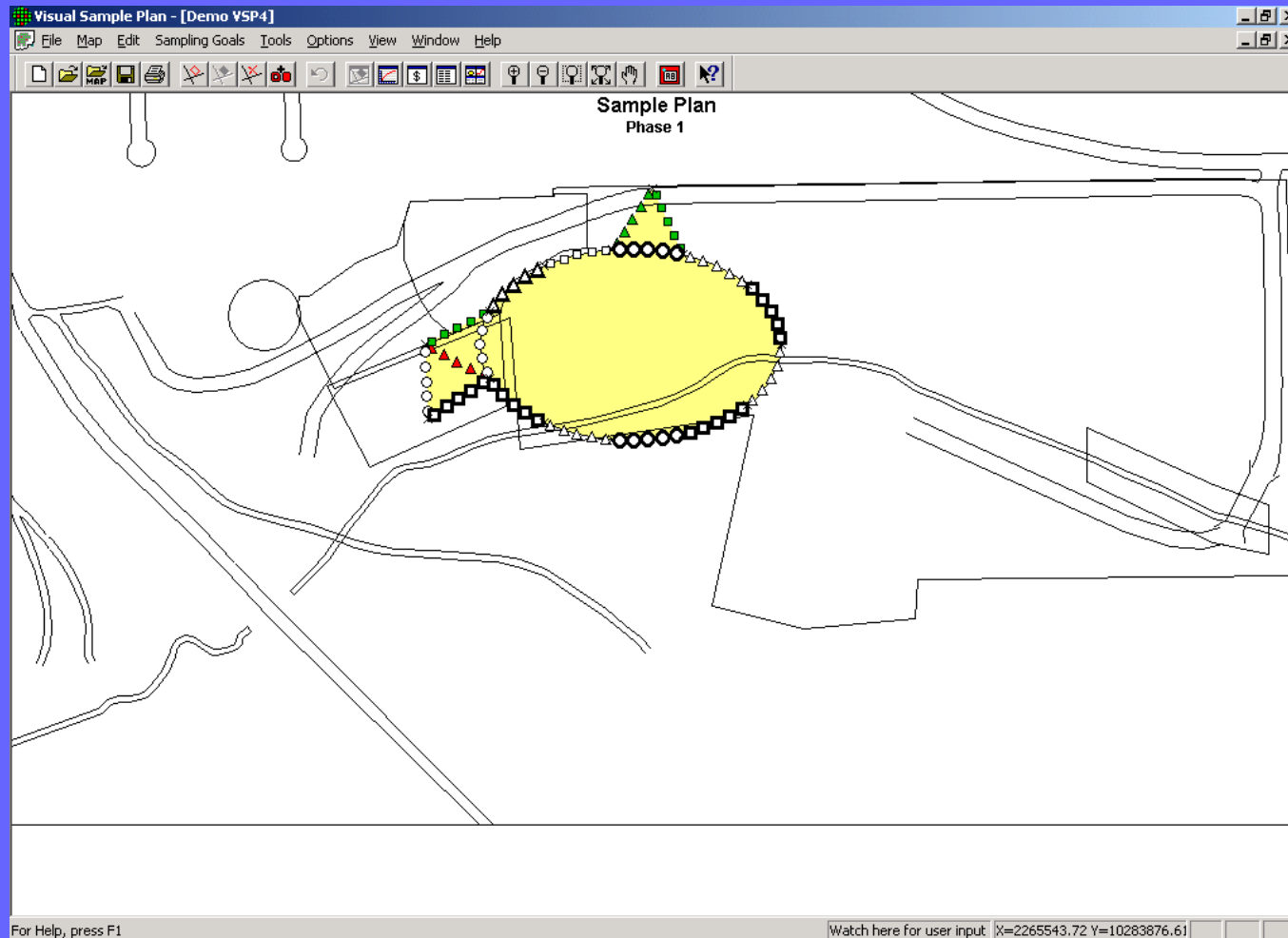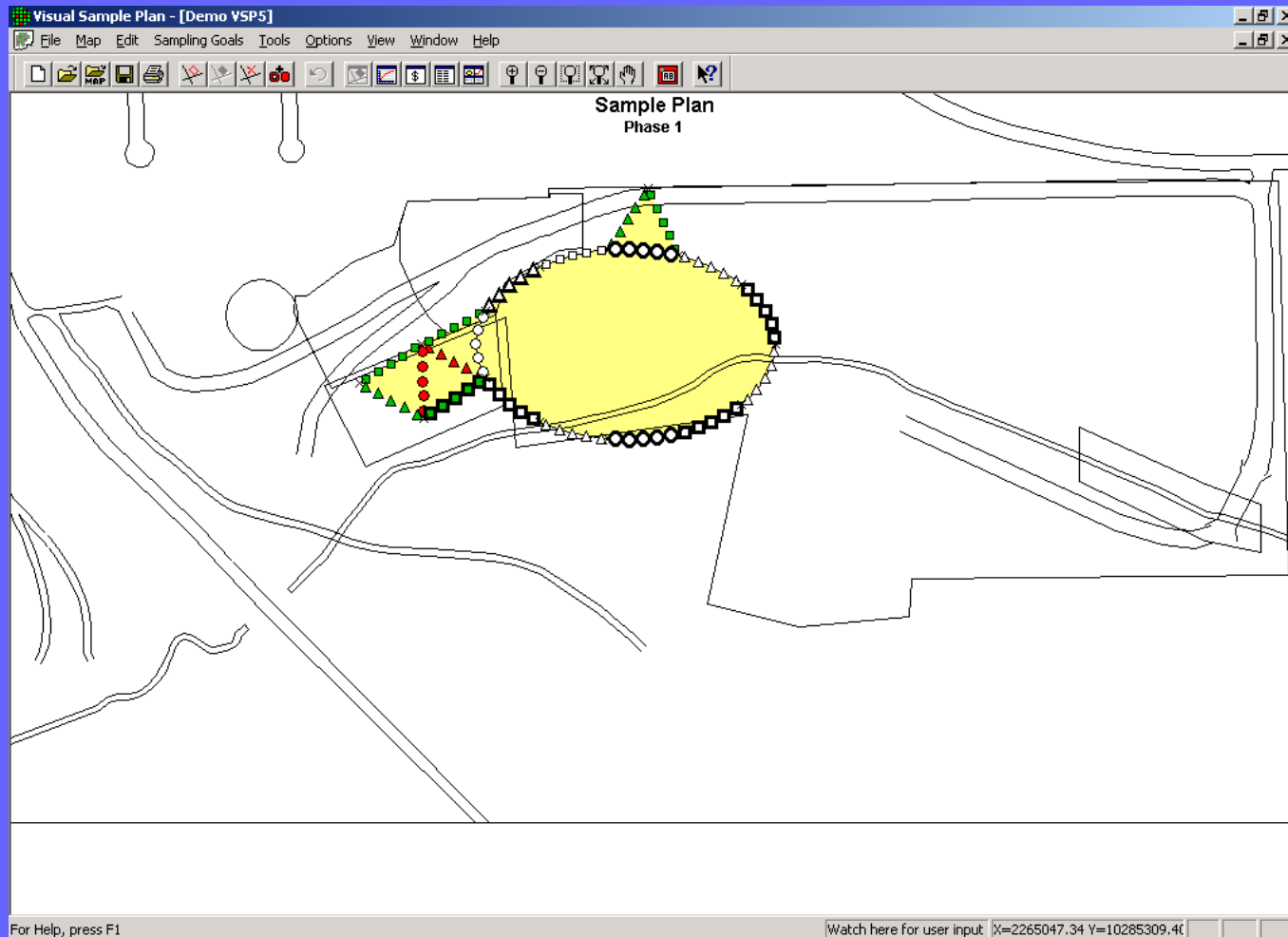

Suspected Source Area

VSP-RSM Example

VSP-RSM Example

VSP-RSM Example

VSP-RSM Example

VSP-RSM Example

VSP-RSM Example